

Before the Federal Communications Commission
Washington, D. C. 20554

In the Matter of)	
An Inquiry into the FCC's)	
Policies and Rules Regarding AM)	MM Docket 93-177
Radio Service Directional Antenna)	(RM-7594)
Performance Verification)	

Comment:

Delner J. Dayton has been involved in Broadcast and Field Service Technical support for 31 years, and has been employed as both Chief Engineer and Contract Technical Consultant for many AM directional facilities. I have extensive "practical" experience with many systems.

My comments are regarding the use of MoM modeling methods in conjunction with the adjustment and maintenance of AM Broadcast directional antenna and monitor systems. Though I am generally in support of using such methods, I feel strongly that checks and balances are needed in the form of some type of field verification to insure many of the recent efforts to improve interference on the AM band are not compromised.

I also feel that easy and inexpensive (if not free) access to the modeling programs and the proper training to utilize them correctly must be guaranteed for the foreseeable future, to keep the costs of such tools within reach of all small market stations.

My actual "long term" field experience with several directional systems has allowed me to have a unique view of many directional systems' operational histories that many engineers do not have the opportunity to experience due to their brief involvement at the time of construction, modification or repair of an existing facility and/or re-radiating objects nearby.

My experience has consistently proven that theory rarely (if ever) agrees with the practical operation of any system. Many times it can be demonstrated that the two are in reasonable agreement, but only when the utmost of care is taken in the construction and maintenance of a facility's towers, ground system and monitoring system.

In the present AM broadcast market, I am finding many stations are no longer maintaining their systems in such good condition, and allowing those stations only to "certify" or verify their systems every two years is inviting disaster in the form of increased interference on the AM dial, ultimately leading to fewer

listeners and further reductions in engineering budgets for all stations, exacerbating the problem

I have also seen situations where there were no flaws in the system but other uncontrollable influences have caused unforeseeable difficulties.

For this reason, I would completely support maintaining some form of reference Monitor points, and feel strongly they should be on the actual azimuths of the protected radials. I do agree with the comments that a combined method of MoM modeling and field measurements may be appropriate, and/or that an abbreviated form of "Full Proof" could be used to establish the limits on the protected radials.

In support of maintaining some form of monitor points, I would cite a couple of examples:

1. I encountered a three tower directional that had flooding conditions in which the ground system characteristics were altered enough to cause changes of all the towers. Unfortunately, the water table was different from one end of the array to the other, causing the towers to change unequally, and varied as the water receded over time and for a period of time as the soil returned to normal following the flooding. The problem was magnified by a tall center tower with high impedance, which of course would be affected differently by changing losses in the ground system resulting in variations in the mutual coupling with other towers. Though the sampling system was operating perfectly, the monitor points could not be brought into compliance with anything near the present FCC prescribed tolerances. The array was re-adjusted to bring the monitor points within limits (operating on an STA). Though the conductivity of the area was higher than normal, a few points checked from the last partial proof showed the monitor points were adequately representing the radiation on the protected radials to insure the station was not causing interference. Thus it became clear the monitor points were a reasonable method of alerting the station's local personnel that a problem existed, and at minimal expense to the station as their operations manager was trained how to check them. This is a reasonable method to insure compliance, without placing a major financial burden on the stations.

In the above example, had the antenna monitor readings/MoM been solely relied on and the monitor points not checked periodically no one would have been alerted to the condition that needed attention, undue interference to at least 2 radio facilities would have gone unchecked for a period of 45 to 60 days. It is unlikely that such problems would have been anticipated, and a new MoM model would be done under flooding conditions and repeated during the array's infinitely variable conditions until returning to normal. The only practical method to prevent interference in this case was to watch the monitor points and adjust periodically as they changed value.

2. I have also seen another example I would like to briefly cite. It is a failure mode I have seen on several occasions in which the sampling system toroids fail in a mode that only changes the loop current readings at the antenna monitor 5 to 10%. Since the Commission no longer requires or lists base current readings/ratios to on the present licenses (and many stations are not maintaining a record of normal base values), it would be easy for someone to assume that a system simply needs a "seasonal" adjustment, without monitor points to verify this is the case. Should an adjustment be made, it is entirely possible that a system could operate for well over a year, up to the full 2 year "re-certification" requirement, before this problem would be noted and corrected, again causing unnecessary interference that could be prevented with the maintenance of a monitor point requirement.

In conclusion, while I support the use of MoM, I strongly feel and support that some form of "Monitor Points" still remain within the rules, regardless of the tuning and proofing methods.

Furthermore, I feel that they should be on the actual protected radial azimuths to be relevant.

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